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JAPAN'S ENERGY POLICY: 1988 UPDATE

Summary

Sustained economic growth combined with domestic and international political changes have taken energy policy out of the spotlight in Japan. A period of relative yen-dollar stability and continued weak prices for oil on global markets have lulled many individuals and companies into taking a stable and reasonably priced energy supply for granted. While the government continues to fund conservation programs and the development of alternative supplies, even its ardor for energy efficiency and security has been thrown into shadow by the economy's rosy glow. But since growth exacerbates Japan's vulnerability to disruption of energy supplies, analysts argue that energy policy should actually be receiving more, not less, attention. Adding to policymakers' headaches, emerging environmental and political issues threaten to complicate the situation.

Aggregate Picture

Japan consumed more energy in FY 1988 (ended March 31, 1989) than in the previous year (see Table 1) when a spurt in usage reflected the continued economic expansion, according to Ministry of International Trade and Industry figures. Interestingly, energy consumed by the household and the transportation sectors has kept pace with the growth of industrial energy use, reinforcing the government's claim that domestic demand is now the main force driving the economy. As for the supply of energy (Table 2), oil usage reversed its gradual decline of the past several years, accounting for 57.2 percent of all supplies. Another worrisome sign for energy watchers is that after years of gradual expansion, nuclear power's share of the total energy supply slipped a bit in fiscal 1988 despite good growth in the amount of power generated. The strong

expansion of hydroelectric and alternative energy sources was a bright spot in the supply picture, although the weather-dependent nature of hydropower diluted the good news.

Table 1: Japan's Energy Consumption by Sector

(millions of kiloliters of crude oil equivalent; percent change in parentheses)

Sector	FY 1985	FY 1986	FY 1987	FY 1988
Industry	158 (-0.4%)	156 (-1.2%)	163 (4.9%)	173 (5.9%)
Households	71 (3.8%)	72 (1.1%)	76 (5.2%)	80 (5.3%)
Transportation	64 (2.4%)	66 (3.5%)	69 (4.1%)	72 (5.6%)
Total	293 (1.2%)	294 (0.4%)	308 (4.8%)	325 (5.7%)

Source: Ministry of International Trade and Industry

Table 2: Japan's Energy Supply by Source

(in millions of units)

	FY 1987			FY 1988			
	Actual	Crude Oil Equivalent	Share	Actual	Crude Oil Equivalent	Share	Percent Change
Oil (kl)	248.7	260.0	56.9%	275.6	275.6	57.3%	6.0%
Coal (mt)	108.0	82.3	18.0	114.3	87.1	18.1	5.8
Nuclear (kw)	27.8	44.3	9.7	29.0	46.2	9.6	4.3
Natural Gas (kl)	45.7	45.7	10.0	43.3	43.3	9.0	-5.3
Hydroelectric (kw)	36.8	18.7	4.1	44.5	22.6	4.7	20.9
Alternatives (kl)	5.7	5.9	1.3	6.5	6.7	1.4	13.5
Total		457.0	100.0		481.0	100.0	5.3

Source: Ministry of International Trade and Industry

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Not surprisingly, imports of crude oil rose in 1988 (Table 3), although the level is still well below that at the beginning of the decade. Imports of petroleum products and nonoil energy sources were mainly up last year with two significant exceptions (Tables 4 and 5). Imports of gasoline fell almost 7 percent as domestic refiners fought back against lower-priced imports. The role of heavy fuel oil also declined slightly in 1988, another bit of positive news for energy planners. Tokyo, which has been urging industry to shift to cleaner, more efficient fuels for some time, was shocked by the huge jump in imports of heavy fuel oil in 1987. Although imports are still high relative to the rest of the 1980s, growth has at least been halted. The gradual elimination of domestic coal production accounts for part of the strong increase in coal imports, while a resurgent domestic petrochemical industry was responsible for pulling in more naphtha, a basic feedstock.

Table 3: Japan's Crude Oil Imports, Production and Inventories

(in 1,000 kiloliters)

	Production	Imports	Throughput	Rate of Operation	Ending Inventories
1980	505	256,833	232,452	67.3%	37,841
1981	456	230,239	210,072	60.9	35,978
1982	467	214,685	194,844	56.5	32,737
1983	492	207,794	187,780	56.9	29,550
1984	476	214,602	194,111	67.1	26,058
1985	625	198,330	179,805	62.3	25,483
1986	736	194,515	172,071	60.6	27,888
1987	707	185,380	167,389	60.7	26,953
1988	689	193,851	172,392	64.4	22,838
1988: 1-6	371	98,336	84,962	63.2	28,810
1989: 1-6	333	103,150	88,971	68.0	24,936

Source: Petroleum Association of Japan

Table 4: Japan's Imports of Gasoline and Kerosene

(in 1,000 kiloliters and percent change over previous year)

	Gasoline		Kerosene	
	Amount	Percent Change	Amount	Percent Change
1985	0	--	0	--
1986	3,293	--	2,648	--
1987	4,190	27.2%	6,012	127.0%
1988	3,902	-6.9	7,472	24.3
1988: 1-6	1,727	-18.4	4,118	72.1
1989: 1-6	1,959	13.4	4,122	0.1

Source: Petroleum Association of Japan

Table 5: Japan's Non-Crude Oil Energy Imports

(in thousands of units)

	Coal (mt)	Naphtha (kl)	Heavy Fuel Oil (kl)	LPG (mt)	LNG (mt)
1980	68,570	7,363	7,431	9,725	16,324
1981	77,959	7,241	7,404	10,097	16,833
1982	78,535	8,998	6,893	11,861	17,480
1983	75,124	13,096	7,285	10,860	18,748
1984	87,227	13,414	7,342	11,320	25,738
1985	93,448	14,896	7,493	11,540	27,556
1986	90,392	17,294	6,924	11,942	28,261
1987	90,915	20,043	8,010	12,612	29,167
1988	101,237	22,634	7,992	12,690	30,765

Source: Ministry of International Trade and Industry

The dramatic decline of oil prices bottomed out in 1988 with the year's average price of $15.60 a barrel well under the previous year's $17.79 mark. The yen-dollar exchange rate, however, continued to move in favor of the Japanese currency, pushing down the price of oil in yen terms even further (Table 6). Prices for most refined products (Tables 7 and 8) fell at both the wholesale and the retail levels. Wholesale prices in particular showed price declines for some products but less favorable changes for others. Consumer prices, conversely, showed generally moderate declines. This failure of the benefits of a strong yen to filter down to consumers is a nascent issue in Japan.

Table 6: Price (c.i.f.) of Imported Crude Oil

	Volume (1,000 kl)	Value ($ millions)	Dollars per bbl	Yen per kiloliter	Exchange Rate*
1980	254,428	$52,749	$32.97	Y47,197	Y236.14
1981	227,444	53,343	37.29	51,387	219.10
1982	212,235	46,266	34.66	53,906	247.28
1983	207,004	40,063	30.77	45,923	237.28
1984	208,908	39,379	29.36	43,713	236.66
1985	195,945	34,600	28.07	42,374	239.97
1986	188,838	19,502	16.42	18,189	176.12
1987	184,713	20,593	17.79	16,328	145.89
1988	192,166	18,852	15.60	12,550	127.93
1988: 1-6	97,577	8,987	17.10	13,611	126.49
1989: 1-6	101,540	10,277	16.23	13,506	131.90

*Yen per dollar

Source: Ministry of Finance

Table 7: Wholesale Petroleum Product Price Indices

	Gasoline	Naphtha	Jet Fuel	Kerosene	LPG	Fuel Oil C
			(1980=100)			
1980	100.0	100.0	100.0	100.0	100.0	100.0
1981	106.2	99.7	108.6	114.4	112.8	118.0
1982	114.1	101.4	121.7	131.2	129.6	124.1
1983	111.1	91.9	123.3	125.0	123.1	116.3
1984	108.6	81.1	122.0	121.2	119.4	101.8
1985	106.3	79.2	122.7	115.3	113.4	106.9
1986	94.2	45.6	98.5	86.1	83.6	72.8
			(1985=100)			
1985	100.0	100.0	100.0	100.0	100.0	100.0
1986	88.6	57.6	80.3	74.7	73.7	68.0
1987	82.0	41.1	66.4	62.3	61.2	38.5
1988	79.4	36.3	63.5	54.4	53.0	40.7
1988: 1-6	79.8	36.8	65.2	54.3	52.9	42.3
1989: 1-6	82.1	33.6	62.6	59.0	57.4	35.5

Source: Bank of Japan

Table 8: Consumer Prices for Petroleum Products

	National Price Index (1985=100)			Tokyo Retail Prices		
	Gasoline	Kerosene	Propane	Gasoline (1 liter)	Kerosene (18 liters)	Propane (cu. m.)
1980	85.6	107.4	94.9	Y155	Y1,543	Y4,881
1981	108.3	113.6	98.4	157	1,628	5,079
1982	118.1	125.9	98.6	172	1,791	5,104
1983	109.0	118.6	99.2	156	1,718	5,134
1984	103.4	109.1	99.7	150	1,613	5,131
1985	100.0	100.0	100.0	146	1,494	5,104
1986	88.0	82.6	97.0	128	1,246	4,974
1987	85.3	61.5	91.5	126	918	4,747
1988	81.6	53.5	89.0	122	842	4,590
1988: 1-6	82.1	54.7	89.8	122	856	4,646
1989: 1-6	82.8	50.4	88.9	122	786	4,548

Source: Management and Coordination Agency

With industry enjoying a boom and consumers on a spending spree it is natural that electricity output and consumption have jumped (Tables 9 and 10). Worrisome to MITI officials is the very large increase in electricity derived from thermal sources, which are mainly oil and coal-fired generators. Thermal plants raised their share of total generated output from 59 percent in 1987 to

over 61 percent last year. Nuclear power's disappointing 1988 performance is attributed to the lengthy refueling process that took several reactors off-line. (Note that these figures do not agree with those in Table 2, which are on a fiscal year basis). On the consumption side it is clear that industry and households played equal roles in boosting total consumption. Electricity use by manufacturers rose about 11.4 billion kilowatt-hours, a little less than half of the gain in total consumption.

Table 9: Output of Electric Utilities in Japan

(in billions of kilowatt-hours)

	Total	Thermal	Nuclear	Hydro
1980	514.05	346.90	82.01	85.15
1981	523.14	352.18	87.23	83.74
1982	522.48	343.30	101.84	77.34
1983	555.49	360.98	113.12	81.39
1984	580.41	378.32	133.23	70.65
1985	603.93	363.75	158.98	81.19
1986	601.51	354.65	167.31	79.55
1987	640.16	378.99	186.61	74.57
1988	663.40	407.33	173.89	82.93
1988: 1-6	319.01	189.13	88.13	41.49
1989: 1-6	328.58	194.12	88.34	45.57

Source: Ministry of International Trade and Industry

Table 10: Japan's Electricity Consumption

(in billions of kilowatt-hours)

			Power				
				Manufacturing			Rail-
	Total	Light	Total	Total	Chemicals	Steel	roads
1980	464.25	105.27	353.98	190.77	26.79	61.80	12.71
1981	470.56	110.30	360.27	184.29	26.28	58.49	12.86
1982	471.44	112.79	358.65	177.95	29.22	53.69	13.06
1983	499.78	122.22	377.57	182.62	27.55	55.47	13.33
1984	524.53	127.51	397.02	191.97	28.76	57.04	13.13
1985	541.39	133.30	408.09	193.75	28.23	55.88	13.44
1986	537.74	136.52	401.22	182.05	25.61	50.01	13.62
1987	570.64	146.11	424.53	189.41	26.55	51.63	14.15
1988	592.91	151.41	441.49	200.84	26.76	54.44	14.70
1988: 1-6	287.96	76.01	211.94	96.50	13.23	26.91	7.19
1989: 1-6	299.07	79.28	219.79	103.71	13.46	27.92	7.43

Source: Ministry of International Trade and Industry

Japan's consumption of nonoil energy (Table 11) showed almost an across-the-board increase for 1988. The booming steel industry and the robust manufacturing sector both gobbled up significantly more coal and fuel oil, respectively, than the previous year. One interesting point is that Japan's efforts to promote liquefied petroleum gas as an automotive fuel continued to have a very mixed record, with consumption falling since 1984.

Total energy consumption by industry points to the widespread nature of the current economic expansion (Table 12). Consumption by every industry, except for metal and coal mining, which are specifically targeted to be phased out, was up in 1988, often by a significant amount. The rapidity with which total industrial energy consumption has grown since 1986 has caused concern within MITI.

Energy consumption by the household sector (Table 13) can only compound these worries since it, too, showed big gains last year in the use of practically all types of energy. The only consolation MITI can take from the numbers is that gains in the use of "cleaner" sources -- electricity, propane and LPG -- represented the majority of the increase. Reducing the role of coal, briquettes and other "dirty" sources has been a consistent government goal.

Energy Policy on the Back Burner . . .

Despite the rise in consumption, energy policy has been pushed down on the government's agenda because of a confluence of several developments. The first is the economy's strong performance over the past three years. October marked the 35th consecutive month of expansion, and both government and private forecasters see no clouds in the sky for at least the next 12 months. Unlike other expansions, the government is urging people to consume more as well as produce. Sales of large appliances and consumer electronics naturally have boosted demand for energy. There appears to be no place for a public campaign to promote energy conservation in this new consumer environment.

The strong, relatively stable yen and weak oil prices also have put energy concerns at the back of people's minds. Government-mandated reductions in the price of electricity and some other types of energy have had a negative impact on the conservation ethos that so dominated Japan in the 1970s. Not even the prospect that the once-dreaded Organization of Petroleum Exporting Countries was about to restore crude oil production discipline could rouse an oil-buying panic by Japanese traders.

The rise of other issues to the top of the political agenda similarly has relegated energy policy to a dark corner. The Recruit Co., Ltd. influence-peddling scandal and the subsequent electoral battering administered to the ruling Liberal Democratic Party were easily more interesting than worrying about the consequences of rising energy imports. The general debate over Japan's new role in the world as an economic superpower also has had an impact. The unspoken attitude is that a country trying to play a bigger role in global development, finance and trade does not have time to worry about its energy dependence.

This shift of priorities is reflected clearly in Tokyo's fiscal planning. Overall government spending on energy has taken a beating in the general account budget since FY 1985 when the allotment of Y626.2 billion ($4.5 billion

Table 11: Japan's Consumption of Imported Non-Crude Oil Energy

(in thousands of units)

	Coal (mt)			Heavy Fuel Oil (kl)				LPG (mt)			LNG (mt)	
	Coke	Steel	Power	Agri-culture	Manufac-turing	Ship-ping	Power	Chemi-cals	Power	Motor Vehicles	Resi-dential	Power
1980	4,309	64,440	10,208	6,433	43,747	6,154	38,360	4,485	3,327	1,548	3,180	12,554
1981	5,197	64,650	13,972	6,444	35,690	4,730	34,508	4,465	2,707	1,241	3,411	12,857
1982	4,330	62,470	15,299	6,323	30,209	4,365	30,983	4,465	2,707	1,241	3,411	12,857
1983	4,551	57,368	18,063	5,707	27,769	4,112	29,476	4,047	3,082	1,822	4,195	14,039
1984	5,014	65,963	20,306	6,086	26,655	4,909	29,220	5,029	3,381	1,843	5,561	19,606
1985	5,821	66,344	23,988	1,303	24,853	4,709	22,271	5,176	3,321	1,722	5,589	21,396
1986	5,528	62,982	23,588	1,498	24,121	4,663	19,952	5,292	3,417	1,728	6,228	21,458
1987	4,652	59,221	14,237	1,708	24,787	4,784	18,411	5,492	3,680	1,543	6,518	22,080
1988	5,025	66,389	14,961	2,038	26,949	5,183	19,408	1,640	4,374	1,460	6,804	23,393

Source: Ministry of International Trade and Industry

Table 12: Energy Consumption by Industry in Japan

(in kiloliters of crude oil equivalent)

	Metal Mining	Coal Mining	Textiles	Pulp, Paper and Cardboard	Chemicals	Petro-chemicals
1983	85,704	663,943	4,023,117	10,480,791	57,216,628	10,671,659
1984	73,995	657,159	4,213,267	10,731,896	66,206,821	10,759,857
1985	73,747	635,692	4,218,646	10,838,465	66,477,596	10,374,103
1986	59,912	624,056	4,342,327	11,093,853	67,046,664	10,065,488
1987	41,522	563,563	4,525,413	11,665,369	69,846,332	10,008,241
1988	38,546	446,993	4,710,347	12,711,293	75,541,745	10,558,227
1988: 1-6	19,915	228,680	2,301,473	6,296,014	36,917,269	5,235,098
1989: 1-6	n.a.	n.a.	2,330,096	6,722,679	37,646,030	4,992,134

	Rubber Products	Nonmetallic Mineral Products	Steel	Nonferrous Ores and Metals	Machinery	Total
1983	421,307	15,482,503	45,462,302	4,375,242	13,676,921	133,909,803
1984	428,331	14,493,878	50,509,329	4,427,235	15,249,193	142,880,126
1985	415,468	13,527,752	50,763,316	4,250,973	15,393,058	141,789,300
1986	415,456	12,502,738	46,778,357	3,905,063	14,321,084	139,389,730
1987	400,364	12,280,545	47,333,105	3,757,101	14,926,466	143,452,025
1988	439,727	13,061,127	52,232,100	3,926,053	16,796,685	154,637,536
1988: 1-6	220,111	6,417,117	25,853,566	1,961,247	8,382,456	76,148,890
1989: 1-6	227,578	6,579,918	26,608,168	1,960,580	8,486,458	78,280,417

Source: Ministry of International Trade and Industry

at Y140=$1.00) was 2.6 percent higher than the previous year. Since then, outlays for energy measures have fallen a cumulative 26.8 percent to Y458.3 billion ($3.3 billion), according to revised spending figures for FY 1988. While the initial budget for the current fiscal year shows a 14.3 percent jump in this item, a downward revision by the end of the fiscal year is not unthinkable.

Table 13: Household Energy Consumption in Japan

	Electricity (mil kwh)	Propane (bil kcal)	Kerosene (1,000 kl)	LPG (1,000 mt)	Other Solids (1,000 mt)	Coal (1,000 mt)
1980	103,199	56,008	16,725	4,984	1,212.3	578.5
1981	108,979	58,178	16,730	5,336	970.0	472.5
1982	110,051	58,200	15,275	5,295	1,173.0	512.8
1983	117,905	60,748	15,928	5,460	1,010.3	509.2
1984	125,588	66,065	17,130	5,696	1,413.2	469.1
1985	129,682	65,706	16,060	5,611	1,479.3	371.9
1986	134,078	70,127	16,992	5,835	1,222.5	304.0
1987	141,531	69,799	16,556	6,114	969.9	228.3
1988	151,067	75,559	18,503	6,848	1,194.9	184.7

Source: Ministry of International Trade and Industry

. . . When It Should Be on the Front

Japanese energy specialists, however, are increasingly worried that the current good times could evaporate within a few years. On the one hand, economic shifts are building greater demand for energy into the economy. On the other hand, most observers agree that oil prices will rise sharply within the next decade. This mismatch, combined with Japan's continued dependence on imported fuels, is gradually pushing energy policy back into the spotlight.

Analysts point to two main factors that will increase Japan's base-level demand for energy:

- Tokyo has embarked on a campaign to make domestic demand the main engine of economic growth. Since private consumption accounts for over half of Japan's gross national product, encouraging consumer spending is considered a key policy. This fits well with the popular sentiment that it is time for the Japanese to begin enjoying the fruits of their hard work and sacrifices since the end of World War II. Tokyo is building more roads, airports and recreational facilities, all of which will lead to an increase in energy consumption by the household sector. In addition, Japanese consumers are more status- and gadget-conscious than ever, filling their homes with conveniences and luxury items that almost all require more power. Full-size refrigerators, large-screen televisions and even electronic bathroom fixtures are becoming commonplace in middle-class Japanese homes. Bigger, more powerful cars also are expected to take a larger share of Japan's market, ensuring that demand for gasoline will increase.

• Manufacturing probably will retain a significant position in the economy for decades, although Japan's services sector continues to increase its share of total economic activity. Japanese and foreign analysts agree that Japan's economy will continue to outperform its peers, translating into continued growth of industrial demand for energy. The revival of basic industries, including steel, petrochemicals and shipbuilding, are sure signs that energy-intensive manufacturing may not fade from sight.

Japanese energy experts are unanimous in forecasting that oil prices will increase sharply in the next 10 years. Several private and government reports show that the price of a barrel of oil could jump from the current $15 range to $25 or $30 by the turn of the century. The volatility of prices is evident from the data for the first months of this year. In dollar terms the average cost of a barrel of oil jumped from $13.28 in January to $17.46 in July. The increase was even greater in yen terms -- Y10,495 ($74.96) per kiloliter in January versus Y15,554 ($111.10) six months later -- given the dollar's appreciation over the same period. While some of the sting of a long-term rise in dollar-denominated oil prices may be reduced by the appreciation of the yen against the dollar, energy specialists take little consolation from the outlook for prices.

Analysts also agree that Japan cannot escape its heavy dependence on foreign energy. Despite increases in alternatives and nuclear power, Japan will continue to import 80 to 85 percent of its total energy needs for the foreseeable future. This dependence actually will increase as domestic coal mining is phased out and as the standard of living continues to increase.

Perhaps most worrisome to energy planners are the aggregate data from 1988. For the first time in many years, the growth of energy consumption outstripped real GNP growth, 5.7 percent versus 5.1 percent (Table 14). While industrial energy demand has done this often during recoveries, both the household and the transportation sectors also consumed energy at a faster rate than the economy grew as a whole. Not surprisingly, these discrepancies have led to a drop in a gross measure of the economy's energy efficiency for the first time since the 1970s. Dividing the value of Japan's GNP by the total amount of energy consumed shows that GNP per kiloliter of oil fell in FY 1988 to Y1,027,496

Table 14: Japan's GNP and Energy Consumption

	FY 1985	FY 1986	FY 1987	FY 1988
Gross National Product*	Y293,981.8	Y301,833.8	Y317,589.4	Y333,936.1
Change	4.5%	2.7%	5.2%	5.1%
Energy Consumption (kl)**	293	294	308	325
Change	1.2%	0.4%	4.8%	5.7%
GNP per Kiloliter***	Y1,003,350.9	Y1,026,645.6	Y1,031,135.4	Y1,027,495.7

*GNP in billions of yen at 1980 prices.
**Energy consumption in millions of kiloliters of crude oil equivalent.
***GNP per kiloliter of crude oil equivalent in yen.

Source: Ministry of International Trade and Industry

($7,339) from Y1,031,134 ($7,365) the year before. The fact that the decline followed several years of improvement has made planners hopeful that FY 1988 was an aberration in a positive trend.

MITI Responds?

The Ministry of International Trade and Industry has primary responsibility for energy policy, both as it relates to industry and households. MITI is resigned to the fact that a policy of fiscal austerity instituted in the early 1980s probably will remain in force for the coming decade and that some budget categories (notably defense and foreign aid) will be expanded at the expense of others. While this fiscal tournequet makes it difficult to win larger total outlays for energy measures, MITI is actively rearranging its spending to put money where it is needed.

According to MITI's initial requests for FY 1990, programs aimed at supporting imports of energy and helping the domestic coal industry have been raided to supply more money to programs designed to develop and introduce alternative energy sources. Coal programs will be cut a total of Y12.8 billion ($91.4 million), while outlays for low-cost trade financing for energy imports and for oil industry rationalization programs also will be reduced. Funds for developing more efficient generators and converting oil-fired plants to other fuels will rise about Y3.3 billion ($236 million). Other increases also have been penciled in: Y2.2 billion ($15.7 million) to commercialize solar power, Y1.3 billion ($9.3 million) for development of solar power technology, Y1.4 billion ($10 million) for high-efficiency gas turbines and Y1.3 billion ($9.3 million) for high-temperature superconductive technology. In addition, nuclear power development will get a boost of Y1.3 billion ($9.3 million) for technology development and almost Y4 billion ($286 million) for safety measures.

Besides sending a warning about energy consumption through its spending priorities, MITI is beginning to beat the drums of public relations. Faced with the sharply higher growth of energy consumption in 1988 and the first months of 1989, MITI's Agency of Natural Resources and Energy initiated a study to revise its long-term energy consumption forecast (see JEI Report No. 19B, May 12, 1989). The new forecast almost certainly will allow for increases in consumption, but analysts are divided about the magnitude of the change. A comparison of ANRE's current long-term outlook, issued in 1987, with its medium-term oil consumption forecast released this year (Tables 15 and 16) shows that the rates of expected growth are far apart: the 1987 estimate projects a little more than 1 percent growth per year in total energy consumption through 1995, while the new oil consumption survey sees average annual growth of 2.3 percent in the 1988-94 period. MITI also is considering other public measures, particularly regarding electricity consumption since new capacity cannot be added quickly. One move under study is to adopt daylight savings time in the summer months; briefly used in Japan during the American occupation the system has been dormant since then. If the proposal is accepted, MITI hopes the shift will reduce the use of airconditioning, the fastest-growing area of energy consumption, according to the ministry.

New Issues

Besides grappling with the traditional problems of conservation, dependence on foreign supplies and development of new energy sources, Japanese policymakers have been tossed two new issues that they must juggle with everything else:

Table 15: Long-Term Energy Outlook, October 14, 1987

(in millions of units and percent share)

	FY 1986		FY 1995		FY 2000		FY 2005	
	Units	Share	Units	Share	Units	Share	Units	Share
Coal (mt)	103.9	18.3%	121.0	18.3%	136.0	18.7%	150.0	19.0%
Nuclear (kw)	25.8	9.5	41.5	13.4	53.5	15.9	65.0	18.0
Natural Gas (kl)	42.8	9.9	55.0	11.1	58.0	10.8	60.0	10.0
LNG (kl)	28.8	6.7	36.0	7.3	38.0	7.1	---	---
Hydroelectric (kw)	35.8	4.2	42.5	4.5	45.5	4.4	48.5	4.0
Geothermal* (kl)	0.4	0.1	2.0	0.4	4.4	0.8	6.0	1.0
Alternatives* (kl)	5.5	1.3	12.5	2.5	24.5	4.5	52.0	9.0
Oil (kl)	246.0	56.8	245.0	49.7	242.0	45.0	240.0	42.0
Domestic (kl)	0.7	0.2	1.3	0.3	1.9	0.4	---	---
LPG (mt)	16.2	---	18.0	---	19.0	---	---	---
Total* (kl)	433.0	100.0	490.0	100.00	540.0	100.0	580.0	100.0

*Crude oil equivalent

Source: Ministry of International Trade and Industry

Table 16: Five-Year Outlook for Japanese Demand for Petroleum Products

(in thousands of kiloliters and percent)

Product	FY 1988 (estimated)	FY 1989 (projected)	Change	FY 1993 (projected)	1988-94 Average Annual Change
Gasoline	39,622	40,778	2.9%	44,284	2.2%
Naphtha	30,288	31,644	4.5	34,026	2.4
Jet Fuel	3,349	3,469	3.6	3,879	3.0
Kerosene	27,606	27,925	1.2	29,571	1.7
Light Fuel Oil	31,983	34,023	6.4	38,777	3.9
Fuel Oil A	25,138	26,265	4.5	28,821	2.8
Fuel Oil B	1,357	1,091	-19.6	557	-16.3
Fuel Oil C	43,810	46,389	5.9	47,502	1.6
Electric Power	20,919	23,231	11.1	24,018	2.8
Other	22,891	23,158	1.2	23,484	0.5
LPG*	17,117	17,549	2.5	18,948	2.1
Total	202,753	211,584	4.4	227,417	2.3

*In thousands of metric tons.

Source: Ministry of International Trade and Industry

• Environmental issues - Increased understanding that the global environment is a delicately balanced mechanism has combined with rising foreign expectations for Japan in international affairs to generate a barrage of criticism of many Japanese policies. Global attention to the so-called "greenhouse effect," in which increased levels of carbon dioxide and other gases in the atmosphere trap the sun's heat and cause global temperatures to rise, plus Japan's major role in the global motor vehicle industry have generated pressure for Tokyo to take the lead in developing technology to reduce engine and other emissions. The new environmental awareness also has created expectations that Japan will contribute its knowledge of advanced alternative energy technology (such as photovoltaic know-how) to the global effort to reduce carbon dioxide levels. Pressure from environmentalists even extends to such areas as foreign aid, where Japan is accused of helping to build "dirty" power plants in developing countries.

It is not clear whether MITI is equipped to handle these new concerns. Some worry that Japanese businesses and the ministry, with its traditional bias toward the needs of industry, will pay only lip service to these potentially catastrophic problems. Prime Minister Toshiki Kaifu is on record that Japan will play a major role in solving global environmental issues, and he is supported by numerous requests in the FY 1990 budget for environment-related projects. Government advocates of nuclear power were quick to seize on global warming as a reason to accelerate the development and the construction of new reactors, adding a new twist to an old policy of encouragement. The growing international and domestic awareness of the environmental situation may take some time, however, to be translated into new policies.

• Nuclear power and domestic politics - The strong showing in the July elections for the upper house of the Diet by the Japan Socialist Party has forced a careful examination of JSP policies by both the party itself and voters. In order for the JSP to pose a serious threat to the Liberal Democratic Party's grip on power, the JSP must clarify and defend many of its left-leaning policies, such as its position on nuclear power. The JSP traditionally has been staunchly antinuclear, be it for military or peaceful uses. Since winning the upper house election, however, the JSP has tried to move toward the center on the peaceful use of the atom, saying that the party would not seek to dismantle existing reactors but would oppose construction of new ones. As mentioned above, some pronuclear officials in the government are trying to hitch their promotion plans to the environmental bandwagon. The LDP maintains its position that nuclear power is an important part of Japan's energy picture and will continue to be developed as long as it is safe. (The safety issue has been the traditional dividing line in the Japanese debate on nuclear power; reactor accidents at Three Mile Island in Pennsylvania and Chernobyl in the Soviet Union have intensified the debate.)

Conclusion

It appears that Japan is at a turning point in energy policy. The earlier drive for conservation and increased efficiency has been overlaid with a policy promoting consumption by both industry and households. Temporarily low oil prices also have lulled many into a complacent mindset. A sharp rise in prices or a tightening of supplies could be a rude awakening for a country just becoming accustomed to its status as an economic superpower. Mixed in with the

old are new issues that policymakers must address if they are to revitalize the country's preoccupation with energy efficiency.

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The views expressed in this report are those of the author and do not necessarily represent those of the Japan Economic Institute.